

Amendments to the Claims

Please amend the claims as set forth below.

1.-39. (Cancelled)

40. (Previously presented) Apparatus for producing a yarn from one or more slivers, the apparatus including:

 a first reciprocating twisting stage including one or more twist rollers arranged to move reciprocally along the axis of rotation of the one or more twist rollers for simultaneously twisting said one or more slivers;

 a non-reciprocating roller for pressing a core filament into a respective one of said slivers as said filament and sliver are pressed against the non-reciprocating roller;

 a guide for passing a core filament and a respective one of said slivers against the non-reciprocating roller prior to the first reciprocating twisting stage; and

 a control system for controlling variation of one or both of (a) the rotational speed of the one or more twist rollers and (b) the speed of the one or more twist rollers along said axis of rotation, to vary the twist profile imparted to the yarn.

41. (Previously presented) Apparatus according to claim 40, wherein the control system enables a user to program a twist profile to be imparted to a production run, series of production runs, or part run, of yarn.

42. (Previously presented) Apparatus according to claim 41, wherein the control system is microprocessor based and includes a user operable keyboard and display.

43. (Previously presented) Apparatus according to claim 40, wherein the apparatus also includes one or more guides positioned after the one or more twist rollers to cause one or more of the strands to pass over a longer path than one or more other strands before the strands are brought together to form a multi-ply yarn, one or more of which guides are movable to enable variation of the position of one or more guides between production runs.

44. (Previously presented) Apparatus according to claim 43, wherein the apparatus also includes an electro-mechanical guide repositioning system for moving one or more of said guides, wherein the repositioning system is also programmably controllable by the control system of the apparatus.

45. (Previously presented) Apparatus according to claim 40, wherein the apparatus also includes a second said reciprocating twisting stage after the first reciprocating twisting stage and wherein said second reciprocating twisting stage is arranged to impart twist to the sliver(s) in areas of non-twist that are located between areas of twist imparted to the sliver(s) by the first reciprocating twist stage.

46. (Previously presented) A method of using the apparatus of claim 40 to produce a yarn from one or more slivers, the method comprising using said guide to pass a core filament and a respective one of said slivers against a non-reciprocating roller;

using the non-reciprocating roller to press the core filament into the sliver;

subsequently passing the one or more slivers between the reciprocating one or more twist rollers to simultaneously twist the slivers; and

using the control system to vary the rotational speed of the one or more twist rollers and/or the speed of reciprocal movement of the one or more twist rollers and/or the extent of reciprocal movement of the one or more twist rollers along the axis of rotation.

47. (Cancelled)

48. (Previously presented) Apparatus for producing a yarn from one or more slivers, the apparatus including:

a first reciprocating twisting stage including one or more twist rollers arranged to move reciprocally along the axis of rotation of the one or more twist rollers for simultaneously twisting said one or more slivers;

In re the Application of David Arthur Lee
Application No. 10/534,957
Docket No. 0074-522135

wherein the one or more twist rollers are mounted so that the extent of reciprocal movement of the one or more twist rollers along the axis of rotation can be controlled and varied to vary a twist profile imparted to the yarn.

49. (Previously presented) Apparatus according to claim 48, wherein the control system enables a user to program the twist profile to be imparted to a production run, series of production runs, or part run, of yarn.

50. (Previously presented) Apparatus according to claim 49, wherein the control system is microprocessor based and includes a user operable keyboard and display.

51. (Previously presented) Apparatus according to claim 48, wherein the apparatus also includes one or more guides positioned after the one or more twist rollers to cause one or more of the strands to pass over a longer path than one or more other strands before the strands are brought together to form a multi-ply yarn, one or more of which guides are movable to enable variation of the position of one or more guides between production runs.

52. (Previously presented) Apparatus according to claim 51, wherein the apparatus also includes an electro-mechanical guide repositioning system for moving one or more of said guides, wherein the repositioning system is also programmably controllable by the control system of the apparatus.

53. (Previously presented) Apparatus according to claim 48, wherein the apparatus also includes a second said reciprocating twisting stage after the first reciprocating twisting stage and wherein said second reciprocating twisting stage is arranged to impart twist to the one or more slivers in areas of non-twist that are located between areas of twist imparted to the one or more slivers by the first reciprocating twist stage.

In re the Application of David Arthur Lee
Application No. 10/534,957
Docket No. 0074-522135

54. (Previously presented) Apparatus according to claim 48, wherein the apparatus further includes:

 a control system for controlling variation of the rotational speed of the one or more twist rollers and the extent of reciprocal movement of the one or more twist rollers along the axis of rotation to enable further variation of the twist profile imparted to the yarn.

55. (Previously presented) Apparatus according to claim 54, wherein the control system enables a user to program the twist profile to be imparted to a production run, series of production runs, or part run, of yarn.

56. (Previously presented) Apparatus according to claim 55, wherein the control system is microprocessor based and includes a user operable keyboard and display.

57. (Previously presented) Apparatus according to claim 54, wherein the apparatus also includes one or more guides positioned after the one or more twist rollers to cause one or more of the strands to pass over a longer path than one or more other strands before the strands are brought together to form a multi-ply yarn, one or more of which guides are movable to enable variation of the position of one or more guide(s) between production runs.

58. (Previously presented) Apparatus according to claim 57, wherein the apparatus also includes an electro-mechanical guide repositioning system for moving one or more of said guides, wherein the repositioning system is also programmably controllable by the control system of the apparatus.

59. (Previously presented) Apparatus according to claim 54, wherein the apparatus also includes a second reciprocating twisting stage after the first reciprocating twisting stage and wherein said second reciprocating twisting stage is arranged to impart twist to the one or more slivers in areas of non-twist that are located between areas of twist imparted to the one or more slivers by the first reciprocating twist stage.

In re the Application of David Arthur Lee
Application No. 10/534,957
Docket No. 0074-522135

60. (Previously presented) Apparatus according to claim 48, wherein the apparatus further includes:

 a control system for controlling variation of the speed and extent of reciprocal movement of the one or more twist rollers along the axis of rotation to enable further variation of the twist profile imparted to the yarn.

61. (Previously presented) Apparatus according to claim 60, wherein the control system enables a user to program the twist profile to be imparted to a production run, series of production runs, or part run, of yarn.

62. (Previously presented) Apparatus according to claim 61, wherein the control system is microprocessor based and includes a user operable keyboard and display.

63. (Previously presented) Apparatus according to claim 60, wherein the apparatus also includes one or more guides positioned after the one or more twist rollers to cause one or more of the strands to pass over a longer path than one or more other strands before the strands are brought together to form a multi-ply yarn, one or more of which guides are movable to enable variation of the position of one or more guides between production runs.

64. (Previously presented) Apparatus according to claim 63, wherein the apparatus also includes an electro-mechanical guide repositioning system for moving one or more of said guides, wherein the repositioning system is also programmably controllable by the control system of the apparatus.

65. (Previously presented) Apparatus according to claim 60, wherein the apparatus also includes a second said reciprocating twisting stage after the first reciprocating twisting stage and wherein said second reciprocating twisting stage is arranged to impart twist to the one or more slivers in areas of non-twist that are located between areas of twist imparted to the one or more slivers by the first reciprocating twist stage.

In re the Application of David Arthur Lee
Application No. 10/534,957
Docket No. 0074-522135

66. (Previously presented) Apparatus according to claim 48, wherein the apparatus further includes:

 a control system for controlling variation of the rotational speed of the one or more twist rollers and the speed and extent of reciprocal movement of the one or more twist rollers along the axis of rotation to enable further variation of the twist profile imparted to the yarn.

67. (Previously presented) Apparatus according to claim 66, wherein the control system enables a user to program the twist profile to be imparted to a production run, series of production runs, or part run, of yarn.

68. (Previously presented) Apparatus according to claim 67, wherein the control system is microprocessor based and includes a user operable keyboard and display.

69. (Previously presented) Apparatus according to claim 66, wherein the apparatus also includes one or more guides positioned after the one or more twist rollers to cause one or more of the strands to pass over a longer path than one or more other strands before the strands are brought together to form a multi-ply yarn, one or more of which guides are movable to enable variation of the position of the one or more guides between production runs.

70. (Previously presented) Apparatus according to claim 69, wherein the apparatus also includes an electro-mechanical guide repositioning system for moving one or more of said guides, wherein the repositioning system is also programmably controllable by the control system of the apparatus.

71. (Previously presented) Apparatus according to claim 66, wherein the apparatus also includes a second said reciprocating twisting stage after the first reciprocating twisting stage and wherein said second reciprocating twisting stage is arranged to impart twist to the one or more slivers in areas of non-twist that are located between areas of twist imparted to the one or more slivers by the first reciprocating twist stage.

72. (Previously presented) Apparatus according to any one of claims 48, 54, 60 and 66, wherein the apparatus includes a non-reciprocating roller for pressing a core filament into a respective one of said slivers as said filament and sliver are pressed against the non-reciprocating roller, and a guide for passing a core filament and a respective one of said one or more slivers against the non-reciprocating roller prior to the first reciprocating twisting stage.

73. (Previously presented) Apparatus according to any one of claims 48, 54, 60, and 66, wherein the apparatus also includes a pair of drafting rollers or drafting belts before the first reciprocating twisting stage.

74. (Previously presented) A method of using the apparatus of claim 72 to produce a yarn from one or more slivers, the method comprising using said guide to pass a core filament and a respective one of said slivers against a non-reciprocating roller;

 using the non-reciprocating roller to press the core filament into the respective one of said slivers;

 subsequently passing the one or more slivers between the one or more twist rollers to simultaneously twist the slivers; and

 using the control system to vary the rotational speed of the one or more twist rollers and/or the speed of reciprocal movement of the one or more twist rollers and/or the extent of reciprocal movement of the one or more twist rollers along the axis of rotation to create a yarn having a predetermined twist profile.

75. (Cancelled)